

## CLAIMS

1. A voltage generator device characterized by comprising:

a voltage generating portion (11) that receives an input voltage and generates a target voltage;

an observing portion (12) that observes an operating condition of the voltage generating portion (11); and

a control portion (16) which causes the voltage generating portion (11) to maintain a voltage generating operation even if the operating condition observed by the observing portion (12) is within a first region that is apart from a normal region, and which causes the voltage generating portion (11) to stop the voltage generating operation if the operating condition observed is within a second region that is further apart from the normal region than the first region is.

2. The voltage generator device according to claim 1, wherein the operating condition is within the first region if a current through the voltage generating portion (11) is greater than a first value of current and is less than or equal to a second value of current, and the operating condition is within the second region if the current through the voltage generating portion (11) is greater than the second value of current.

3. The voltage generator device according to claim 2, wherein the control portion (16) reduces a target value of voltage output by the voltage generating portion (11) if a value of current through the voltage generating portion (11) increases provided that the operating condition is within the first region.

4. The voltage generator device according to claim 1, wherein the operating condition is within the first region if a voltage output by the voltage generating portion (11) is greater than a first value of voltage and is less than or equal to a second value of voltage, and the operating condition is within the second region if the voltage output by the voltage generating portion (11) is greater than the second value of voltage.

5. The voltage generator device according to claim 4,

wherein the observing portion (12) includes a voltage detecting circuit (14) that detects the first value of voltage, and an overvoltage detecting circuit (15) that detects the second value of voltage, and

wherein the control portion (16) performs on the voltage generating portion (11) a feedback control of setting an output of the voltage generating portion (11) at the target voltage in accordance with an output of the voltage detecting circuit (14), and stops the feedback control in accordance with an output of the overvoltage detecting circuit (15) and prohibits the voltage generating portion (11) from performing the voltage generating operation.

6. A motor vehicle characterized by comprising:

an electricity storage means (1);

a voltage generator device (6) that compensates for a fall of an output voltage of the electricity storage means (1); and

an automatic engine stop control means (5) that automatically controls stopping and starting of an engine,

wherein the voltage generator device (6) includes a voltage generating portion (11) that receives an input voltage and generates a target voltage, an observing portion (12) that observes an operating condition of the voltage generating portion (11), and a control portion (16) which causes the voltage generating portion (11) to maintain a voltage generating operation even if the operating condition observed by the observing portion (12) is within a first region that is apart from a normal region, and which causes the voltage generating portion (11) to stop the voltage generating operation if the operating condition observed is within a second region that is further apart from the normal region than the first region is, and

wherein the automatic engine stop control means (5) prohibits an automatic stop of the engine if it is detected that the operating condition is within the first region.

7. A control method for a voltage generator device (6) that includes a voltage generating portion (11) that receives an input voltage and generates a target voltage, characterized by comprising the steps of:

observing an operating condition of the voltage generating portion (11) and causing the voltage generating portion (11) to maintain a voltage generating operation even if the operating condition is within a first region that is apart from a normal region; and

causing the voltage generating portion (11) to stop the voltage generating operation if the operating condition observed is within a second region that is further apart from the normal region than the first region is.

8. The control method for the voltage generator device according to claim 7, wherein the operating condition is within the first region if a current through the voltage generating portion (11) is greater than a first value of current and is less than or equal to a second value of current, and the operating condition is within the second region if the current through the voltage generating portion (11) is greater than the second value of current.

9. The control method for the voltage generator device according to claim 8, wherein a target value of voltage output by the voltage generating portion (11) is reduced if a value of current through the voltage generating portion (11) increases provided that the operating condition is within the first region.

10. The control method for the voltage generator device according to claim 7, wherein the operating condition is within the first region if a voltage output by the voltage generating portion (11) is greater than a first value of voltage and is less than or equal to a second value of voltage, and the operating condition is within the second region if the voltage output by the voltage generating portion (11) is greater than the second value of voltage.

11. The control method for the voltage generator device according to claim 10,

wherein the voltage generator device (6) includes a voltage detecting circuit (14) that detects the first value of voltage, and an overvoltage detecting circuit (15) that detects the second value of voltage, and

wherein the control method further comprises the step of performing on the voltage generating portion (11) a feedback control of setting an output of the voltage generating portion (11) at the target voltage in accordance with an output of the voltage detecting circuit (14), and the step of stopping the feedback control in accordance with an output of the overvoltage detecting circuit (15) and prohibiting the voltage generating portion (11) from performing an operation.

12. A control method for a motor vehicle that includes a voltage generator device that compensates for a change in an output voltage of an electricity storage means, characterized by comprising the steps of:

observing an operating condition of the voltage generator device (6) and causing the voltage generator device (6) to maintain a voltage generating operation even if the operating condition is within a first region that is apart from a normal region;

controlling stopping and starting of an engine in accordance with a state of the motor vehicle if the operating condition is within the normal region; and

prohibiting an automatic stop of the engine if it is detected that the operating condition is within the first region.

13. A computer-readable recording medium in which a program for causing a computer to execute the control method for the voltage generator device according to anyone of claims 7 to 11 or the control method for the motor vehicle according to claim 12 is recorded.